UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73534

CR NO. 111

OVER THE

SAUK RIVER

DISTRICT 3 – STEARNS COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 73534, Piers 1 and 2, were found to be generally in good condition below water with no defects of structural significance observed. The steel pipe piles exhibited coating failure and light surface corrosion from 1 foot above the waterline to the channel bottom. The channel bottom appeared stable with no significant scour observed.

INSPECTION FINDINGS:

(A) The steel piles exhibited coating failure and fairly uniform light surface corrosion from 1 foot above the waterline to the channel bottom with random rust nodules up to 1/2 inch in diameter and associated pitting 1/16 inch deep over 10 percent of the surface area.

(B) A light accumulation of timber debris consisting of 3 inch diameter and smaller branches was observed scattered along the entire perimeter of Pier 2.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 73534

Feature Crossed: Sauk River

Feature Carried: CR No. 111

Location: District 3 – Stearns County

Bridge Description: The bridge superstructure consists of three spans of multiple steel beams with a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two cast-in-place concrete, steel pipe piles piers. The piers are numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 19, 2007

Weather Conditions: Partly Cloudy, 50°F

Underwater Visibility: 2.0 feet

Waterway Velocity: 0.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of a single line of nine cast-in-place concrete, steel pipe piles supporting a concrete pier cap.

Maximum Water Depth at Substructure Inspected: Approximately 7.6 feet.

4. WATERLINE DATUM

Water Level Reference: Top of pier cap at east end of Pier 2.

Water Surface: The waterline was approximately 17.5 feet below reference. Assumed Waterline Elevation = 82.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/10/07

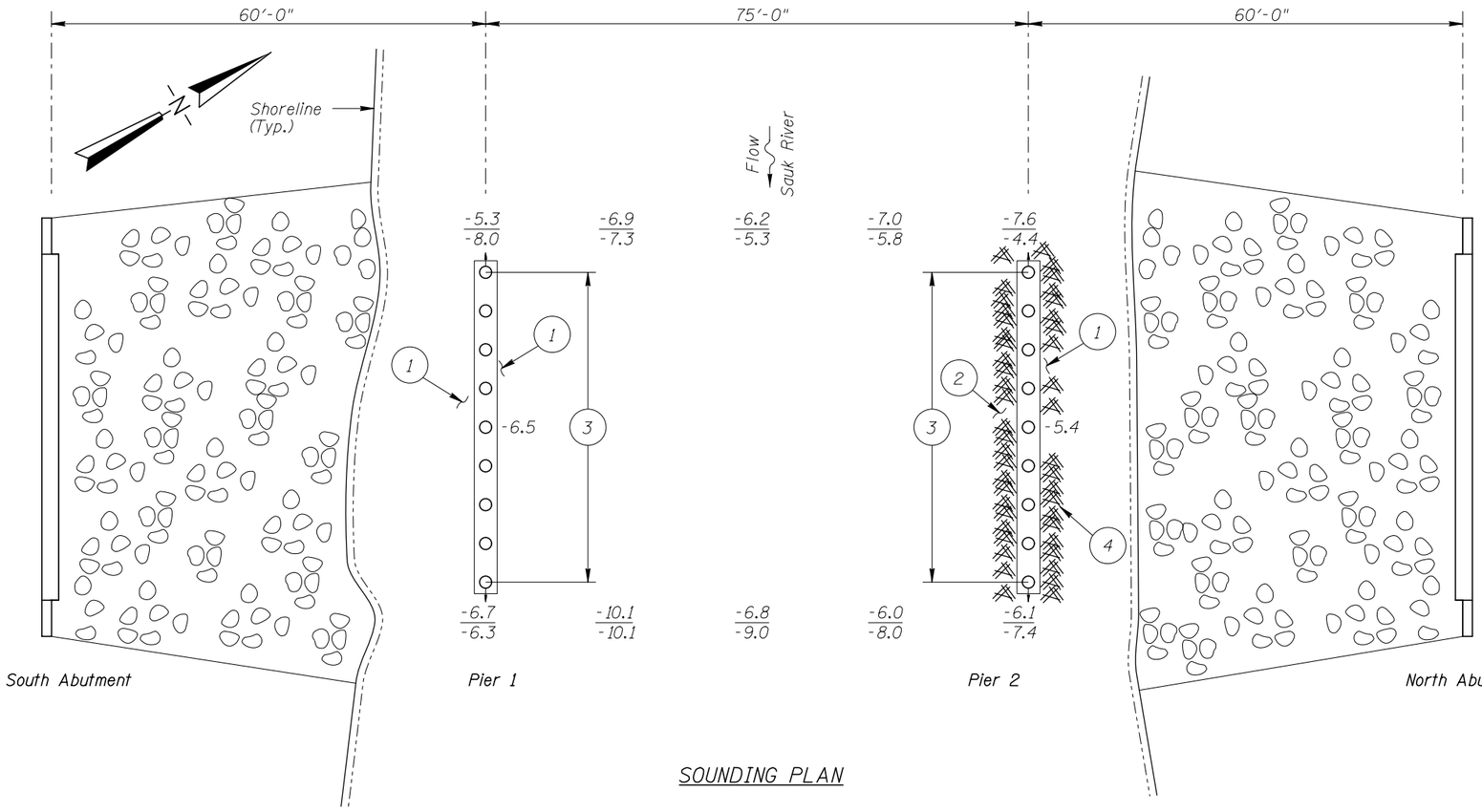
Item 113: Scour Critical Bridges: Code I/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes X No

Photograph 1. View of Pier 1, Looking North.

Photograph 2. View of Pier 2, Looking Northwest.



SOUNDING PLAN

TYPICAL END VIEW OF PIER S

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 19, 2007 the waterline was located approximately 17.5 feet below the top of the pile cap at the downstream end of Pier 2. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 82.5.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom consisted of sand and silt with 1 to 2 foot diameter riprap and 3 inches of probe rod penetration.

(2) The channel bottom consisted of sand and gravel with up to 4 inches of probe rod penetration.

(3) The steel piles exhibited coating failure and fairly uniform surface corrosion from 1 foot above the waterline to the channel bottom with random rust nodules up to 1/2 inch in diameter with pitting 1/16 inch deep, over 10 percent of the surface area.

(4) Light accumulation of timber debris consisting of 3 inches in diameter and smaller branches was observed scattered along entire perimeter of Pier 2.

Legend

-8.0	Sounding Depth (10/19/07)
-8.0	Sounding Depth (9/28/02)
	20" Diameter Steel Pipe, Cast-in-place Concrete Pile
	Battered 20" Diameter Steel Pipe, Cast-in-place Concrete Piles
	Random Riprap
	Timber Debris

Note:

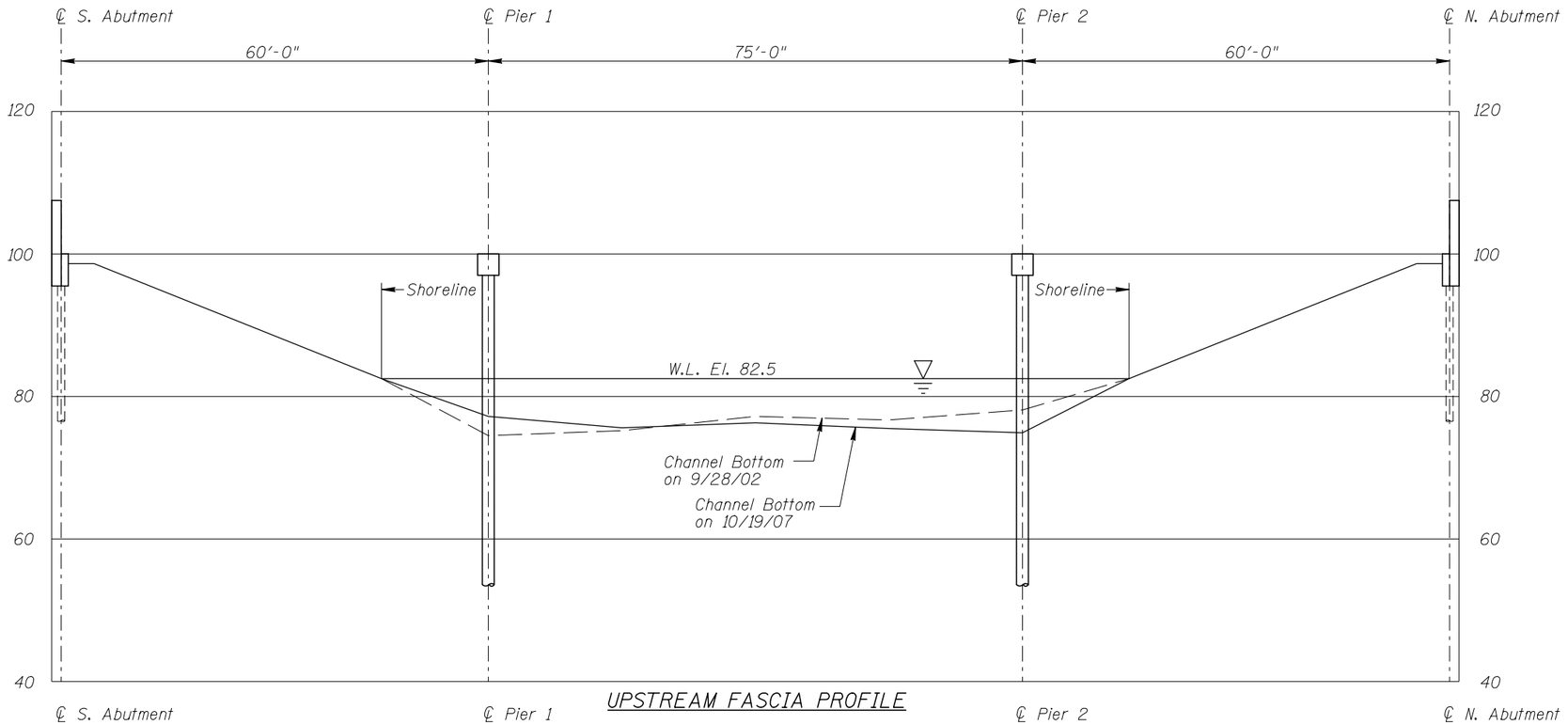
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

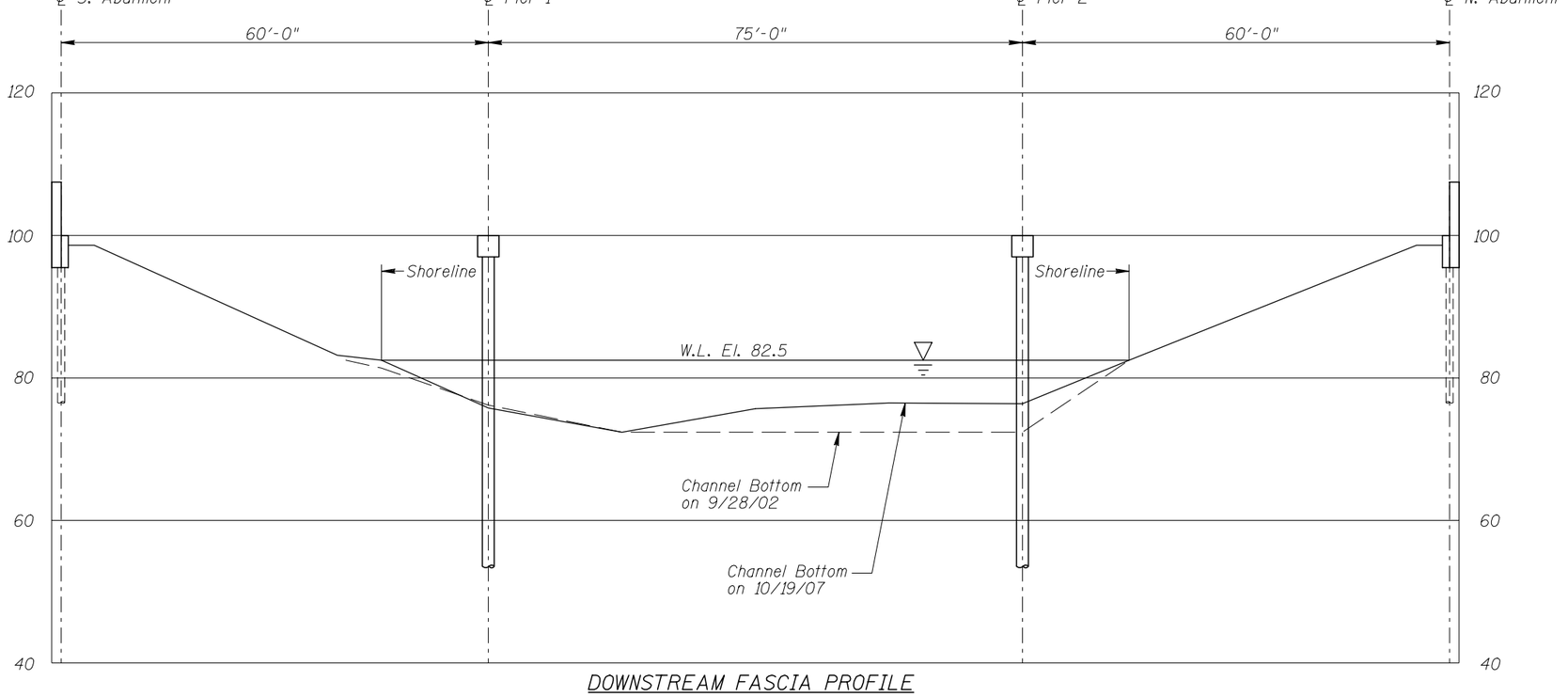
STRUCTURE NO. 73534
OVER THE SAUK RIVER
DISTRICT 3, STEARNS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT., 2007
Checked By: MDK		Scale: NTS
Code: 522173534		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT., 2007
Checked By: MDK		Scale: 1"=20'
Code: 522I73534		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 19, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 73534 WEATHER: Partly Cloudy, 50° F

WATERWAY CROSSED: Sauk River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Camera

TIME IN WATER: 2:30 p.m.

TIME OUT OF WATER: 3:00 p.m.

WATERWAY DATA: VELOCITY 0.5 f.p.s.

VISIBILITY 2.0 feet

DEPTH 7.6 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the substructure units were in good condition with no significant deterioration. The steel pipe piles exhibited coating failure with minor surface and nodular corrosion from 1 foot above the waterline to the channel bottom. A light accumulation of timber debris consisting of 3 inch diameter and smaller branches was observed scattered along the entire perimeter of Pier 2. At the time of the inspection, the channel bottom appeared stable with scattered riprap at both piers and no significant scour present.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 73534
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Sauk River

INSPECTION DATE October 19, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	6.7’	7	N	N	9	N	7	8	8	8	N	8	N	7	N	N	N	N
	Pier 2	7.6’	7	N	N	9	N	7	8	8	8	8	8	N	7	N	N	N	N

*UNDERWATER PORTION ONLY

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NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.